

**REMARKS:**

Applicant thanks Examiner Tran for her time and consideration of the present application during the telephonic interview of January 4, 2011 with the undersigned.

During the interview the Chinese Journal article was discussed. Additionally, new experimental data was proposed to further demonstrate the unexpected result of the claimed invention.

A newly executed Declaration under 37 CFR §1.132 by one of the named inventors, Mr. Bernard BOURSIER is included in the appendix.

This application is believed to be in condition for allowance for the reasons stated below.

**Status of the Claims**

Claims 7-20 remain in this application.

**Claim Rejections-35 USC §103**

Claims 7-20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over BRENDEL et al. 2002/0192344 (BRENDEL) in view of the Journal of the Chinese Cereals and Oils Association ("the Chinese Journal article").

Claims 7-8, 11-12, 14-15 and 18-19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over KILIBWA U.S. 6217930 in view of the Chinese Journal article.

Claims 9-10, 13, 16-17 and 20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over KLIBWA in view of the Chinese Journal article and BRENDEL.

These rejections are respectfully traversed.

The claimed invention solves the problem of reliance on chemical improving agents, e.g. ascorbic acid, enzymes and emulsifiers, but especially ascorbic acid, to achieve desired dough properties (page 2, lines 25-36 and page 5, lines 13-20 of the present specification). The solution includes the use of maltodextrins, dextrins and/or oligosaccharides in combination with a reducing agent.

The Chinese Journal article describes various types of bread improvers, including ascorbic acid (in the description of oxidizing agents in point 1), emulsifiers (in point 2), and an enzyme such as alpha-amylase (in point 4).

This article explains in point 1 that oxidizing agents and reducing agents act in a reverse way in the dough:

- Oxidizing agents, like ascorbic acid, cause oxidation and cross-linking of protein in the dough, i.e. to reinforce the gluten network.
- Reducing agents, like cysteine, glutathione and sulphites, reduce the degree of cross-linking of proteins, i.e. to lessen the cohesion of the gluten network.

The Chinese Journal article, however, when combined with BRENDEL and/or KILIBWA fails to render obvious the claimed invention for the following three reasons:

**1. BRENDEL does not suggest a reducing agent.**

BRENDEL includes one example (Example 6) wherein viscoelastic/rheological dough properties would have been contemplated, i.e. bread dough.

The dough includes ascorbic acid. That is, according to the Chinese Journal article, ascorbic acid increases oxidation and cross-linking of protein in the dough to reinforce the gluten network.

In order to approach the claimed invention would have required removing ascorbic acid, and adding a reducing agent to lessen the cohesion of the gluten network. That is, provide a dough characteristic contrary to that suggested in the example.

However, BRENDEL does not suggest that a lessening of the cohesion of the gluten network would be desirable, and BRENDEL also does not suggest that shortening kneading time or increasing the workability of the dough would be desirable.

**2. KILIBWA does not need a reducing agent.**

KILIBWA teaches adding betaine to dough to optimize the machinability of a dough (See, e.g. column 4, lines 28-43, shown below):

The betaine is present in the baked goods in amounts within a specific range effective to manifest itself in an enhancing effect that is observable with the naked eye. At levels below that amount, certain characteristics imparted to the baked good, e.g., moisture retention, are not observed or measured. At the other extreme, if present in too high a concentration, the dough or batter containing betaine or other betaine containing ingredients prior to baking becomes too difficult to work with. For example, the dough may become too sticky, the batter viscosity may become drastically reduced so that the product would not be organoleptically acceptable to consumers, cookie spread may become uncontrollable and dough machinability may become difficult. The betaine is thus present in the baked goods in amounts between those ranges.

That is, KILIBWA optimizes the amount of betaine to achieve a desired balance between viscoelastic properties of the dough, the machinability of the dough and the organoleptic properties of the baked goods.

In order to approach the claimed invention, however, would have required adding a reducing agent to lessen the cohesion of the gluten network.

As KILIBWA teaches that further decrease in viscosity of the dough and increase in stickiness would have a negative effect on both organoleptic properties and machinability, one would have been strongly discouraged from adding a reducing agent to further lessen the cohesion of the gluten network.

**(3) The results are unexpected.**

Even if one would have been prompted to add cysteine to the composition of BRENDEL (and remove ascorbic acid) or add cysteine to the composition of KILIBWA, one of ordinary skill in

the art would not have expected to achieve the same results as those according to the claimed invention.

An additional experiment has been executed under the direction of one of the named inventors, Mr. Bernard Boursier, to make clear the role of the reducing agent in the dough (for preparing brioches), i.e., lessening the cohesion of the gluten network of the dough and reducing the volume of the baked product.

The Declaration under 37 CFR 1.132 included in the Appendix shows a comparison between the New additional test A' (herein "formulation A'") and the formulations A, B and C from the tests in Example 2 of the instant application.

Formulation A' differs solely from control Formulation A in that it includes 0.2g of the reducing agent cysteine. All other ingredients and the processing conditions were the same. Neither of these formulations includes the claimed improving agent.

Contrary to the dough of Formulation A, Formulation A' resulted in a very sticky dough, too sticky to be acceptable. So much so that it was not possible to measure the length increase in shaping of the brioches. This stickiness is attributed to the fact that reducing agents like cysteine lessen the cohesion of the gluten network, and impact the quality of the baked product.

These results are similar to those seen in Formulation D previously presented in the Declaration under 37 CFR 1.132

filed July 8, 2011, which also differed from Formulation A by an added 0.2 g of cysteine, as well as a different amount of butter and flour.

These results are also consistent with the teachings of the Chinese Journal article teaches, i.e. the addition of a reducing agent reduces the degree of cross-linking of proteins.

Thus, one would have expected that adding a reducing agent, such as cysteine, to a known formulation would have decreased cohesion of the gluten network, and impacted the quality of the baked product.

As previously demonstrated in the Declaration under 37 CFR 1.132 filed July 8, 2011, the addition of the claimed improving agent alone to a given formulation results in an increased unacceptable kneading time. However, the claimed reducing agent when combined with the claimed improving agent results in a dough that has acceptable an acceptable kneading time (from an industrial point of view).

Moreover, the claimed combination of reducing agent and improving agent (also demonstrated in the Declaration under 37 CFR 1.132 filed July 8, 2011) provides an improved organoleptic properties compared to formulation A, and with increased softness.

Therefore, in summary, the claimed combination of reducing agent and improving agent results in:

- (1) a reduced volume expected by a reducing agent is avoided,
- (2) an increased kneading time expected by the improving agent is avoided, and
- (3) their combination results in organoleptic properties superior to those achieved by either agent alone (i.e. similar to a composition absent the agents) and an increased softness.

These results are not predicted by the cited documents, and, thus, the maintained organoleptic properties with an increased softness without a reduced volume or increased kneading time are unexpected superior results.

Therefore, the claimed composition is unobvious in view of BRENDL, KILIBWA and the Chinese Journal article, and withdrawal of the rejections is respectfully requested.

**Double Patenting Rejection**

Claims 7-20 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-11 of copending Application 11/993,025.

As the present application is the earlier filed application, it is respectfully requested that the rejection be withdrawn.

Pursuant to MPEP 804 I B, if the only rejection remaining in the earlier filed of the two pending applications, while the later-filed application is rejectable on other grounds, the examiner should withdraw that rejection and permit the earlier-filed application to issue as a patent without a terminal disclaimer.

**Conclusion**

In view of the foregoing remarks and the new experimental test provided in the attached Declaration, this application is in condition for allowance at the time of the next Official Action. Allowance and passage to issue on that basis is respectfully requested.

Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON

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/Robert A. Madsen/  
Robert A. Madsen, Reg. No. 58,543  
209 Madison Street, Suite 500  
Alexandria, VA 22314  
Telephone (703) 521-2297  
Telefax (703) 685-0573  
(703) 979-4709

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**APPENDIX:**

The Appendix includes the following item:

- a 37 CFR 1.132 Declaration